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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/342,729	06/29/1999	NOBUO NAKAMURA	0039-7260-2S	7005

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EXAMINER

GENCO, BRIAN C

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 12/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/342,729	<b>Applicant(s)</b> NAKAMURA ET AL.	
	<b>Examiner</b> Brian C Genco	<b>Art Unit</b> 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6, 11 and 13-16 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4-6, 11 and 13-16 is/are rejected.
- 7) ☐ Claim(s) 2 and 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

Applicant's amendment filed July 28, 2004 has been fully considered by the Examiner.  
Applicant's arguments are moot in view of the new grounds of rejection presented herein bellow.

***Allowable Subject Matter***

Claims 2 and 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

See Examiners statement of the reasons for allowance in the Office action mailed May 6, 2004.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4-6, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over (USPN 5,164,832 to Halvis et al.) in view of (USPN 5,986,297 to Guidash et al.).

In regards to claim 1 Halvis discloses an image pickup apparatus comprising:  
an array of unit cells arranged in rows and columns, each unit cell having a light-receiving device configured to receive light and generate an electric charge corresponding to the light (e.g., Fig. 9),  
a charge-accumulating section configured to accumulate the electric charge generated by the light-receiving device (e.g., element 812 of Fig. 10),

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a transfer device configured to transfer the electric charge from the light-receiving device to the charge-accumulating section (e.g., element 810 of Fig. 10),

a charge-limiting device configured to limit the electric charge accumulated in the charge-accumulating section (e.g., element 814 of Fig. 10), and

an amplifying device configured to amplify a voltage signal corresponding to the electric charge in the charge-accumulation section (e.g., elements 818 and 820 of Fig. 10);

a plurality of vertical signal lines extending along the columns of unit cells, respectively, each configured to receive the amplified voltage signal amplified by the amplifying device of any unit cell of the associated column (e.g., Fig. 9); and

a control circuit configured to control each of the unit cells, to cause the charge limiting device to limit the electric charge generated by the light-receiving device during a first period and transferred to the charge-accumulating section through the transfer device (e.g., column 12, lines 31-37, 47-51; column 9, lines 40-68), to cause the charge-accumulating section to hold the electric charge limited by the charge-limiting device, and to add to the electric charge held in the charge-accumulating section, an electric charge generated by the light-receiving device during a second period following the first period and transferred to the charge-accumulating section through the transfer device (e.g., column 12, lines 42-64; column 10, lines 1-41; column 4, lines 19-29).

Halvis does not disclose nor preclude the electric charge generated in the light-receiving device is accumulated in the light-receiving device when an OFF voltage is applied to the transfer device, and the electric charge generated and accumulated in the light-receiving device is transferred from the light-receiving device to the charge-accumulating section when an ON

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voltage is applied to the transfer device. Rather, Halvis teaches to maintain the voltage to the transfer device such that it is fully conductive and does not restrict the flow of charge generated by detector 102 (column 12, lines 51-56).

Examiner notes that one skilled in the art would clearly recognize to utilize the transfer gate such that the electric charge generated in the light-receiving device is accumulated in the light-receiving device when an OFF voltage is applied to the transfer device, and the electric charge generated and accumulated in the light-receiving device is transferred from the light-receiving device to the charge-accumulating section when an ON voltage is applied to the transfer device in order to isolate the photodetector from the floating diffusion region. Guidash discloses to utilize the transfer gate in this way such that the charge read out to the floating diffusion can be stored or read out without being affected by incident light (column 6, lines 49-53; Guidash). Therefore it would have been obvious to one skilled in the art at the time of the invention to have utilized Halvis' transfer gate such that the electric charge generated in the light-receiving device is accumulated in the light-receiving device when an OFF voltage is applied to the transfer device, and the electric charge generated and accumulated in the light-receiving device is transferred from the light-receiving device to the charge-accumulating section when an ON voltage is applied to the transfer device, thus resulting in isolating the photodetector from the floating diffusion so that the charge read out to the floating diffusion can be stored or read out without being affected by incident light.

In regards to claim 4 see column 4, lines 19-29.

In regards to claims 5, 6, and 11 see Examiners notes on the rejection above.

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Claims 13-16 is rejected under 35 U.S.C. 103(a) as being unpatentable over (USPN 5,164,832 to Halvis et al.) in view of (USPN 5,986,297 to Guidash et al.) in view of (USPN 4,488,163 to Bluzer et al.).

In regards to claim 13 Halvis does not disclose nor preclude the light receiving device is formed of a photodiode comprising an n-type region formed in a surface of a p-type substrate and a p-type region formed in a surface of the n-type region.

Bluzer discloses to provide a p-n-p type photodiode structure so as to permit charge integration at low level signals and permit a forward biased photovoltaic mode for high level signals (column 2, lines 35-47; Fig. 2; column 3, lines 57-60). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the light receiving device structure disclosed by Bluzer in order to permit charge integration at low level signals and permit a forward biased photovoltaic mode for high level signals.

In regards to claims 14-16 see Examiners notes on the rejection above.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian C. Genco who can be reached by phone at 703-305-7881 or by fax at 703-746-8325. The examiner can normally be reached on Monday thru Friday 8:30am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on 703-308-9644. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is 703-308-4357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian C Genco  
Examiner  
Art Unit 2615

October 26, 2004

  
ANDREW CHRISTENSEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600